

Species Status Assessment

Common Name	smooth cliffbrake	Date Updated:	2024-1-25
Scientific Name	<i>Pellaea glabella</i> ssp. <i>glabella</i>	Updated By:	Rachael A. Renzi
Family	Pteridaceae		

Species Synopsis (a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):

Smooth cliffbrake (*Pellaea glabella* ssp. *glabella*) is a perennial forb in the maidenhair-fern family. It is one of two species of *Pellaea* in New York (Werier et al. 2023). *P. atropurpurea* is a close relative and it can be difficult to differentiate between the two from a distance (NYNHP 2024). *P. glabella* ssp. *glabella* ranges from Vermont south to Virginia and Tennessee, and west to Nebraska, Kansas, and Texas (NatureServe 2023; NYNHP 2024). The subspecies is considered stable throughout its range (NatureServe 2023). In NY, near the northeastern edge of the fern's range, the population trend is stable, though it is rarer than *P. atropurpurea* (NYNHP 2023, 2024). The number of known populations has increased over the long-term, and the number of plants seems to have remained stable or even increased (NYNHP 2023). They tend to prefer calcareous substrates that are out of reach from harm and out of reach from botanists. Some sites lack qualitative data, so additional surveys are needed. *P. glabella* ssp. *glabella* grows on shaded cliffs, buffs, and even in the mortar of walls (NYNHP 2023, 2024). Six populations have not been visited since before 2000, and surveys to these sites, as well as those without counts, are needed (NYNHP 2023).

I. Status

a. Current legal protected Status

i. Federal:		Candidate:	
ii. New York:	<u>Threatened</u>		

b. Natural Heritage Program

i. Global:	<u>G5T5</u>		
ii. New York:	<u>S2</u>	Tracked by NYNHP?	On Active Tracking List

Other Ranks:

COSEWIC: Not listed in Canada
IUCN Red List: Not assessed by IUCN Red List

Status Discussion:

Pellaea glabella ssp. *glabella* is Threatened in New York (Ring 2023). There are 20 known populations with an estimated total of about 3,500 – 4,000 plants across the state (NYNHP 2023, 2024). At least five of the populations have hundreds of plants, but at least 11 have fewer than 100 plants (NYNHP 2023). Some populations have as few as 12 or less plants. Then, there are at least four additional historical locations (NYNHP 2023, 2024). There are few threats to these populations and a brief trends assessment concluded that this species has been relatively stable in New York for many years (NYNHP 2023, 2024). With continued survey work and the discovery of new populations, this plant may one day move off the active plant list.

II. Abundance and Distribution

Region	Present?	Abundance	Distribution	Time Frame	Listing status or S-Rank	SGCN?
North America	Yes	Unknown	Unknown	Unknown		
Northeastern US	Yes	Unknown	Unknown	Unknown		
New York	Yes	Unknown	Unknown	Unknown	T	
Connecticut	Yes	Unknown	Unknown	Unknown	SNR	
Massachusetts	Yes	Unknown	Unknown	Unknown	SNR	
New Jersey	Yes	Unknown	Unknown	Unknown	S2	
Pennsylvania	Yes	Unknown	Unknown	Unknown	SNR	
Vermont	Yes	Unknown	Unknown	Unknown	S3	
Ontario	Yes	Unknown	Unknown	Unknown	S4	
Quebec	No	-	-	-		

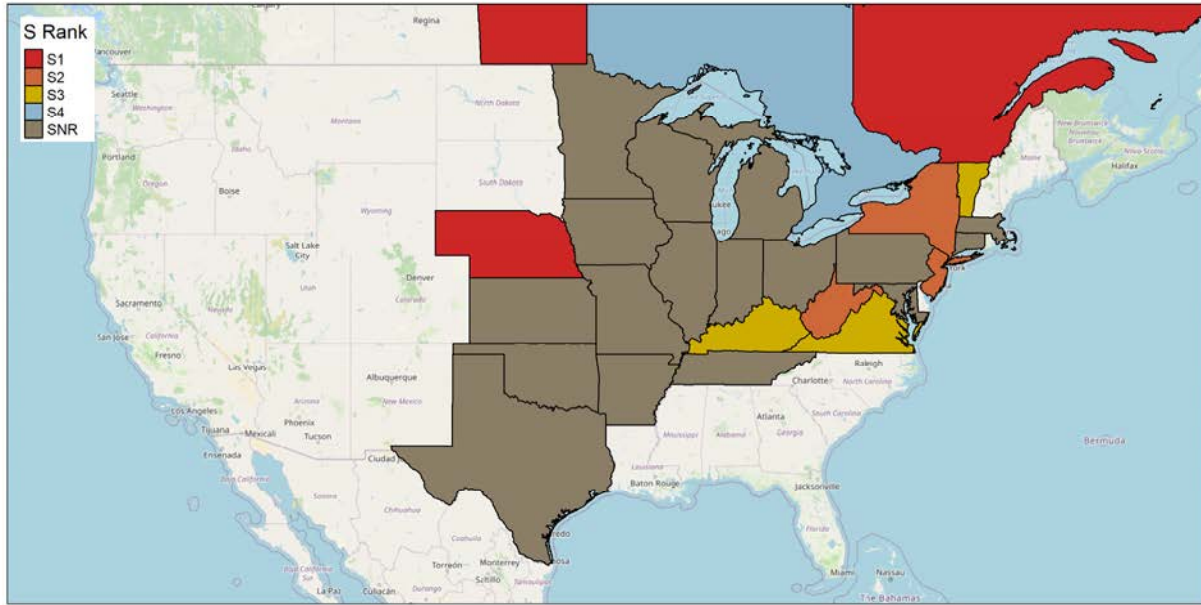


Figure 1. *Pellaea glabella* ssp. *glabella* North American distribution.

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Peripheral	Unknown

III. NY Rarity and Trends

Trends Discussion

The populations of *Pellaea glabella* ssp. *glabella* are stable in NY (NYNHP 2023, 2024). 10 populations have been discovered since 2000 (NYNHP 2023). While this doesn't necessarily mean that the number of occurrences of the fern have been increasing, having more populations contributes to the stability of the plant's presence in NY. More data is needed to determine a trend in the population sizes of newer populations. A handful of populations have been revisited since the early 1900s and late 1800s. These populations appear to have slowly grown over time, but differences in surveyors may contribute to discrepancies. The plants tend to grow in clumps, so a count of individuals is difficult unless the plants are within reach. It is, however, safe to say that the populations are stable as long as their cliffside habitats remain intact. Across its range, NatureServe designated this taxon as a globally secure subspecies.

Details of historic and current occurrence

Pellaea glabella ssp. *glabella* is located on cliffs and rock outcrops, typically restricted to the limestone escarpment that roughly parallel the New York State Thruway from Niagara Falls to Albany and south to the mid-Hudson Valley (NYNHP 2024). It is also known from the limestone areas of the St. Lawrence River Valley and scattered alkaline rock outcrops present elsewhere. There are likely between 3,500 and 4,000 plants total in NY (NYNHP 2023).

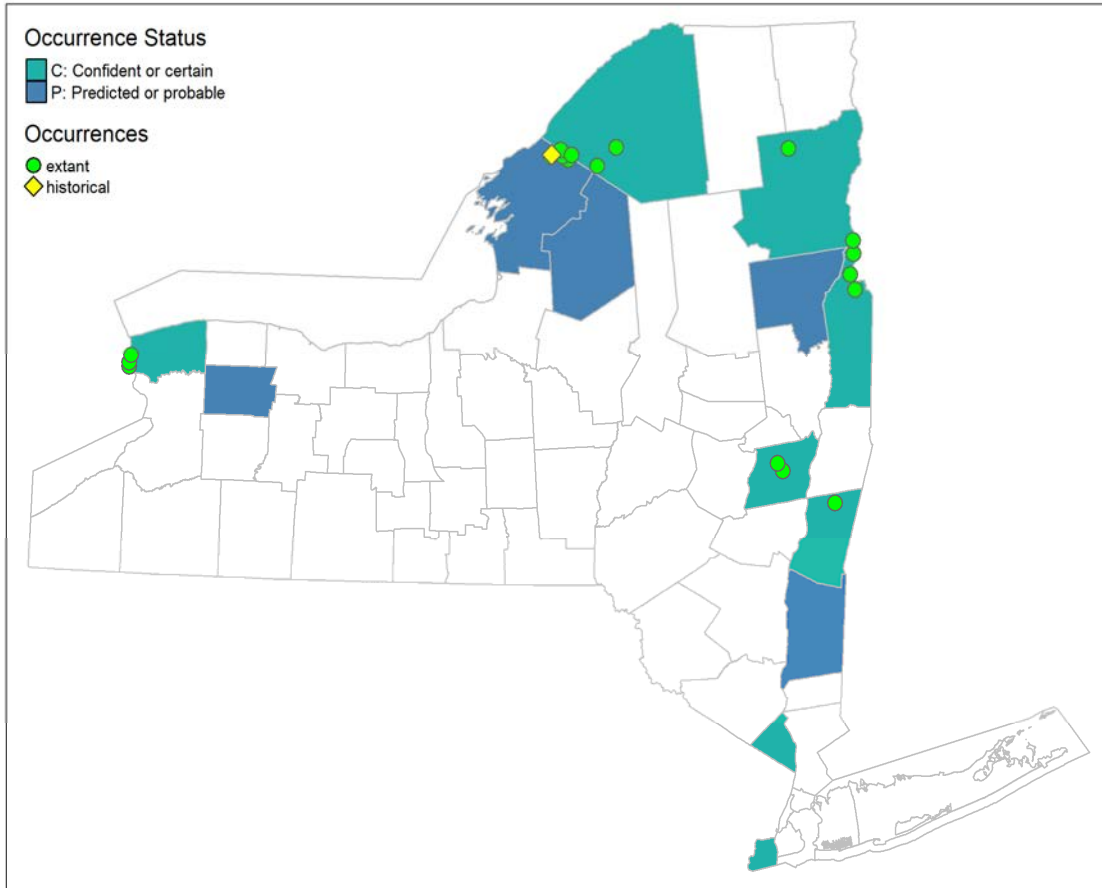


Figure 2. NYS distribution for *Pellaea glabella ssp. glabella*

Table 1. Number of records (element occurrences) of *Pellaea glabella ssp. glabella* grouped by the dates known to be extant (the years spanning first observation to last observation) and the number and percent of total of USGS 7.5 minute map quadrangles these observations fall within for New York State.

Years	# of Records	# of distinct quads	% of quads in State
Pre-1995	8	10	1.0
1995-2004	7	8	0.8
2005-2014	7	8	0.8
2015-2023	2	3	0.3

Monitoring in New York

Five of the populations occur on state park land, and an additional population is on land managed by the NYS OPRHP (NYNHP 2023). These are surveyed on a 10-year cycle. An additional five populations occur on DEC land, four of which are in the Adirondack Park (NYNHP 2023). The remaining populations are not monitored on any regular basis.

IV. Primary Habitat or Community Type (from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):

Northeastern Habitat Classification Macrogroup: Cliff and Talus.

NY Ecological Communities: Calcareous cliff community, Cliff community (Edinger et al. 2014, NYNHP 2023, 2024).

Habitat or Community Type Trend in New York

Declining: Stable: Increasing: Unknown: ✓
 Time Frame of Decline/Increase:
 Habitat Specialist Yes: ✓ No:

Habitat Discussion:

The fern is mainly of calcareous cliffs, often with eroding or crumbly white limestone, occasionally in sandstone, or rarely in the lime mortar of stone walls (NYNHP 2023, 2024). These cliffs are often shaded and may be associated with river/stream gorges (NYNHP 2023, 2024). Throughout its North American range, it grows on calcareous cliffs, bluffs, and ledges, usually on limestone substrates (FNA 1993, Gleason & Cronquist 1991). Compared to the habitat of its relative, *P. atropururea*, the exposed calcareous rocky slopes on which it grows are often damper or more shaded (Fernald 1950).

V. Species Demographics and Life History (include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):

Pellaea glabella ssp. *glabella* is a perennial fern that undergoes apogamous reproduction (Windham 2020a). It can spread via these apogamous tetraploid spores or form a cluster via stout rhizome (Windham 2020b).

Table 2. Phenology of *Pellaea glabella* ssp. *glabella* in New York State (NYNHP 2023).

Phenology	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Fruiting													
Vegetative													

VI. Threats

This fern’s habitat is on hard-to-reach cliffs where no immediate threats are known.

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes: No: ✓ Unknown:

If yes, describe mechanism and whether adequate to protect species/habitat:

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

There are no management considerations to offer at this time.

Complete Conservation Actions table using IUCN conservation actions taxonomy at link below. Use headings 1-6 for Action Category (e.g., Land/Water Protection) and associated subcategories for Action (e.g., Site/Area Protection) -

<https://www.iucnredlist.org/resources/conservation-actions-classification-scheme>

Table 3. Recommended conservation actions for *Pellaea glabella* ssp. *glabella*.

Conservation Actions	
Action Category	Action
Land/water protection	1.1. Site/area protection
Land/water protection	1.2. Resource & habitat protection
Land/water management	2.1. Site/area management
Land/water management	2.2. Invasive/problematic species control
Land/water management	2.3. Habitat & natural process restoration

VII. References

This SSA drew heavily from these resources:

NatureServe. 2023. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <http://www.natureserve.org/explorer>. [Accessed 12/14/2023].

New York Natural Heritage Program. 2024. Online Conservation Guide for *Pellaea glabella* ssp. *glabella*. Available from: <https://guides.nynhp.org/smooth-cliff-brake/>. Accessed January 25, 2024.

New York Natural Heritage Program, State University of New York College of Environmental Science and Forestry. 2023. Element Occurrence and Element Dataset. Albany, New York. [Exported 12/14/2023].

Werier, David, Kyle Webster, Troy Weldy, Andrew Nelson, Richard Mitchell, and Robert Ingalls. 2023 New York Flora Atlas. [S. M. Landry and K. N. Campbell (original application development), USF Water Institute. University of South Florida]. New York Flora Association, Albany, New York. [Accessed 11/21/2023].

Additional references:

Edinger, G. J., D. J. Evans, S. Gebauer, T. G. Howard, D. M. Hunt, and A. M. Olivero (editors). 2014. Ecological Communities of New York State. Second Edition. A revised and expanded

edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY. <https://www.nynhp.org/documents/39/ecocomm2014.pdf>

Fernald, M.L. 1950. Gray's manual of botany. 8th edition. D. Van Nostrand, New York. 1632 pp.

Flora of North America Editorial Committee. 1993. Flora of North America, North of Mexico. Volume 2. Pteridophytes and Gymnosperms. Oxford University Press, New York. 475 pp.

Gleason, Henry A. and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. The New York Botanical Garden, Bronx, New York. 910 pp.

Holmgren, Noel. 1998. The Illustrated Companion to Gleason and Cronquist's Manual. Illustrations of the Vascular Plants of Northeastern United States and Adjacent Canada. The New York Botanical Garden, Bronx, New York.

Mitchell, Richard S. and Gordon C. Tucker. 1997. Revised Checklist of New York State Plants. Contributions to a Flora of New York State. Checklist IV. Bulletin No. 490. New York State Museum. Albany, NY. 400 pp.

Reschke, Carol. 1990. Ecological communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation. Latham, NY. 96 pp. plus xi.

Ring, Richard M. 2023. New York Rare Plant Status Lists. New York Natural Heritage Program, State University of New York College of Environmental Science and Forestry, Albany, NY. December 2023. 108 pp.

Wager, W. H. Jr., D. R. Farrar, and Katherine L. Chen. 1965. A New Sexual Form of *Pellaea glabella* var. *glabella* from Missouri. American Fern Journal vol. 55 (4). pp 171-178. Available from: <https://www.biodiversitylibrary.org/item/99463#page/424/mode/1up>

Windham, Michael D. 2020a. *Pellaea glabella* subsp. *glabella*. Flora of North America Association. FNA 2. Available from: http://floranorthamerica.org/Pellaea_glabella_subsp._glabella

Windham, Michael D. 2020b. *Pellaea glabella*. Flora of North America Association. FNA 2. Available from: http://floranorthamerica.org/Pellaea_glabella